

CLAIMS

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A centrifuge for separating components contained in a fluid, comprising:
a flexible centrifuge bag having a doughnut shaped configuration and a central core;

a rotatable rotor comprising an annular base having a first annular channel and an annular cover having a second annular channel for holding a flexible centrifuge bag therebetween, whereby when said base and said cover are superimposed, said first and second channels define an annular interior chamber having an off-centered figure eight configuration, said cover further comprising one or more radially spaced apart concentric indicator lines for monitoring the separation of said components.

2. The centrifuge of claim 1, wherein said base further comprises a first outer rim extending from the base top surface and a first grooved column axially centered and extending from the base top surface, wherein the height of said first rim is equal to the height of said first column, said first rim and said first column defining said first annular channel, and wherein said cover further comprises a second outer rim extending from the cover bottom surface and a second grooved column axially centered and extending from the cover bottom surface, wherein the height of said second rim is equal to the height of said second column, said second rim and said second column defining said second annular channel.

3. The centrifuge of claim 1, wherein said flexible bag comprises superimposed upper and lower flexible sheets having doughnut shaped configurations, inner perimeters defining a central core of said centrifuge bag, and outer perimeters, wherein said upper and lower sheets are completely sealed together at their outer and inner perimeters, said centrifuge bag further comprising an inlet tube and at least one outlet tube, said tubes sandwiched between said

upper and lower sheets and sealed therebetween and extending from the central core of said centrifuge bag, wherein the distal end of one of said outlet tubes is positioned relative to a predetermined indicator line.

4. The centrifuge of claim 2, wherein when said centrifuge bag is positioned between said cover and base and wherein said tubes are seated in said grooves.

5. The centrifuge of claim 1, wherein said components separate at varying radial distances based on their densities.

6. The centrifuge of claim 3, wherein said fluid is whole blood and said components comprise a red blood cell fraction, a white blood cell fraction, a platelet rich plasma fraction, and a platelet poor plasma fraction.

7. The centrifuge of claim 6, wherein said cover comprises first, second and third indicator lines having radial distances that indicate the location of the components with respect to the distal end on said outlet tube.

8. The centrifuge of claim 7, wherein the distal end of one of said outlet tubes is positioned relative to said second indicator line.

9. A method for separating components contained in a fluid, comprising:

a) providing a flexible centrifuge bag comprising an inlet tube and at least one outlet tube;

b) providing a rotatable rotor comprising an annular base and an annular cover for holding said flexible centrifuge bag therebetween, said base having a first outer rim extending from the base top surface and a first column axially centered and extending from the base top surface, said first rim and said first column defining a lower chamber, said cover having a second outer rim extending from the cover bottom surface and a second column axially centered and extending from the cover bottom surface, said second rim and said second column defining an upper chamber, said cover further comprising one or more spaced apart concentric indicator lines for monitoring the separation of said components, and wherein the distal end of one of said outlet tubes is positioned relative to a predetermined indicator line;

c) positioning said flexible bag in said base, wherein said base column extends through said bag central core;

- d) superimposing said cover over said base, whereby said lower and upper chambers define an interior chamber and wherein said centrifuge bag is rotatable with said rotor;
- e) rotating said rotor;
- f) introducing an aliquot of said fluid to said rotating centrifuge bag via said inlet tube, whereby said components separate into fractions based on their densities at varying radial distances from the central axis; and
- g) removing a predetermined fraction via said outlet tube.

10. The method of claim 9, wherein said centrifuge bag comprises superimposed upper and lower flexible sheets having doughnut shaped configurations, inner perimeters defining a central core of said centrifuge bag, and outer perimeters, wherein said upper and lower sheets are completely sealed together at their outer and inner perimeters and wherein said inlet and said outlet tubes are sandwiched between said upper and lower sheets and sealed therebetween, said tubes extending from the central core of said centrifuge bag

11. The method of claim 9, wherein said first column further comprises a first groove extending the diameter of said first column, and said second column further comprises a second groove extending the diameter of said second column, wherein when said bag is held between said cover and base said tubes are seated in said grooves.

12. The method of claim 9, wherein said components separate at varying radial distances based on their densities.

13. The method of claim 10, wherein said fluid is whole blood and said components comprise a red blood cell fraction, a white blood cell fraction, a platelet rich plasma fraction, and a platelet poor plasma fraction.

14. The method of claim 13, wherein said cover comprises first, second and third indicator lines having radial distances that indicate the location of the components with respect to the distal end on said outlet tube.

15. The method of claim 14, wherein the distal end of said outlet tube is positioned relative to said second indicator line.